

## **REMARKS**

### **I. Overview**

Applicants have reviewed and considered the Office Action dated June 12, 2007 and the reference cited therewith. Claim 30 has been amended and new claims 38-44 have been added. Support for these amendments and additional claims may be found throughout the published application, for example, in claims 6, 14 and 15 as originally filed, Figure 8, and at paragraph 103 and 107. No new matter has been added. Upon entry of this amendment, claims 30, 35, and 38-44 are pending in the instant application. Applicants respectfully request reconsideration of the above-identified application in view of the amendments above and remarks that follow.

### **II. Claim Rejections under 35 U.S.C. § 112**

#### **A. Enablement**

Claims 30 and 35 remain rejected under 35 U.S.C. § 112, first paragraph, because the specification allegedly does not reasonably provide enablement for a solution comprising SEQ ID NO:2 with any  $\beta$ -expansin other than Lol p1.

The Examiner states that while the specification provides guidance on using SEQ ID NO:2 with Lol p1 expansin, it does not enable all other  $\beta$ -expansins which are not group 2/3 pollen allergens. The Examiner states that Cosgrove (Current Opinion in Plant Biology, 3:73-78, 2000) teaches the existence of  $\beta$ -expansins in plants with unknown function and that some plant derived  $\beta$ -expansins may be involved in cytokinin-mediated cell proliferation, and their role in cell wall elongation remain elusive.

Claim 30 has been amended to remove any reference to  $\beta$ -expansins, thereby alleviating this rejection, however in the event the Examiner intends to reject the term group 2/3 allergens as now present in the claim, Applicants would like to assert the following.

Applicants respectfully traverse this rejection as it pertains to amended claim 30 and claims 35, and 38-44. As an initial matter, Applicants have amended claim 30 to recite "[a] solution useful for the expansion of a plant cell wall comprising an isolated group 2/3 pollen allergen having  $\beta$ -expansin activity in solution and wherein said solution has a pH of from about 4.0 to about 7.5". Applicants respectfully assert that based on the present application and the knowledge in the art at the time of the present invention, one of ordinary skill in the art could practice the invention without undue experimentation.

One ordinarily skilled in the art would be able to identify and isolate group 2/3 allergens having  $\beta$ -expansin activity using standard techniques known to one skilled in the art and the teachings of the specification. As further support and in response to this rejection, Applicants submit herewith a declaration by Dr. Daniel J. Cosgrove, a co-inventor of this application. The declaration contains data from cell wall extension assays performed using a novel maize group 2/3 allergen that differs in amino acid sequence from the *Lol p 3* and *Phl p 2/3* described in the specification at Figure 4. The additional group 2/3 allergen was identified and isolated using standard techniques, see, for example, paragraphs 24, 47-48, 75, 100 and 129-130 in the published specification. The group 2/3 allergen's  $\beta$ -expansin activity was determined using cell wall extension assays. See, for example, the specification at paragraphs 115 and 133 and exhibit A. Taken together, the identification and isolation of these proteins and the results from the cell wall extension assays in exhibit A demonstrate that, consistent with the specification, additional

group 2/3 allergens having  $\beta$ -expansin activity can be easily identified, and Applicants have provided at least 3 examples of such allergens.

Accordingly, the data in the declaration demonstrates that one of skill in the art, relying on the present disclosure, and on knowledge in the art at the time the present application was filed, would be able to identify additional group 2/3 allergens with  $\beta$ -expansin activity of the present invention. Thus, the specification and declaration demonstrate that the claims of the invention are enabled for a solution that has a pH of about 4.0 to about 7.5 comprising an isolated group 2/3 pollen allergen having  $\beta$ -expansin activity and that this solution is useful for the expansion of a plant cell wall. Accordingly, Applicants respectfully request that such a rejection be reconsidered.

## **B. Written Description**

Claims 30 and 35 remain rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The Examiner states the specification does not have adequate written description for a genus of  $\beta$ -expansins which are not a group 2/3 pollen allergens but have  $\beta$ -expansin activity under current written description guidelines. The Examiner states the specification does not describe these undisclosed structures of Applicant's broadly claimed genus and one skilled in the art cannot reliably predict the structure of these sequences based upon the disclosure Lol p1. The Examiner writes that Applicants have failed to describe conserved functional domains that are shared by these undisclosed structures of their broadly claimed genus, and as such, Applicants have failed to reduce their broadly claimed genus to practice.

As an initial matter, Applicants have amended claim 30 to recite "[a] solution useful for the expansion of a plant cell wall comprising an isolated group 2/3 pollen allergen having  $\beta$ -expansin activity in solution and wherein said solution has a pH of from about 4.0 to about 7.5", thereby alleviating the Examiner's rejection. In the event that the Examiner would choose to apply the written description rejection to the term "group 2/3 pollen allergen", Applicants would like to submit the following.

The written description standard as applied by the Examiner in this office action is improper. As stated: "Adequate description ... does not require the literal support for the claimed invention... Rather, it is sufficient if the originally-filed disclosure would have conveyed to one having ordinary skills in the art that an appellant had possession of the concept of what is claimed." *In Staehelin v. Secher*, 24 USPQ 2d 1513 (BPAI 1992). (emphasis added).

Applicants urge that the two group 2/3 allergens provided in the specification adequately represent the broadly claimed genus as encompassed by these claims. Applicants respectfully point out that in addition to *Lol pIII* (SEQ ID NO:2), the published specification at Figure 4B and paragraphs 27 and 102 also describe an additional group 2/3 allergen referred to as *Phl p 2/3*.

Thus, Applicants provide two working examples that provide an adequate written description of the claimed genus of the sequences. Moreover, the specification provides guidance regarding detailed, relevant identifying characteristics of group 2/3 allergens so that additional group 2/3 allergens can be recognized. Applicants describe that group 2/3 allergens, unlike expansins, lack the structural domain of domain 1. Published specification, at paragraphs 39 and 110. In addition, Applicants describe multiple assays that can be used to determine if a putative group 2/3 allergen has  $\beta$ -expansin activity so that one skilled in the art would be able to identify a polypeptide as a group 2/3 allergen. Applicants refer the Examiner to the attached

declaration and exhibit A which demonstrates that one of skill in the art, relying on the present disclosure, and the knowledge in the art at the time the present application was filed, would be able to recognize the genus of group 2/3 allergens. Thus, one skilled in the art would recognize from the disclosure that Applicants invented and had possession of the claimed subject matter. Accordingly, the specification provides a written description of independent claim 30 and dependent claims 35 and 38-44. Accordingly, Applicants respectfully request that such a rejection be reconsidered.

### **III. Claims Rejections Under 35 U.S.C. § 102**

Claims 30 and 35 remain rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ansari et al. (Biochemistry, 28:8665-8670, 1989) taken with the evidence of Li et al. (U.S. Patent Publication No. US2004/0110190).

The Examiner states that Ansari et al. disclose a protein preparation from rye grass pollen comprising a pollen extract which comprises a group 2/3 pollen allergen (100% sequence identity to instant SEQ ID NO:2).

As an initial matter, Applicants have amended claim 30 to recite "[a] solution useful for the expansion of a plant cell wall comprising an isolated group 2/3 pollen allergen having  $\beta$ -expansin activity and wherein said solution has a pH of from about 4.0 to about 7.5". New claim 44 also recites a similar pH range. Support for this amendment may be found throughout the published specification, for example, at Figure 8, and at paragraphs 103 and 107. The pH range is critical for the wall extension activity of the group 2/3 allergen as demonstrated in Figure 8.

The Ansari reference says nothing about the  $\beta$ -expansin activity of Lol p III or the potentiation of its activity by including the same in a solution at a pH of around 4.0 to about 7.5

As such, it cannot anticipate the instant invention. Applicants respectfully request that this rejection be withdrawn and reconsidered.

#### **IV. Additional claims 38-44**

Support for these additional claims may be found throughout the published application, for example, in claims 6, 14 and 15 as originally filed, Figure 8, and at paragraph 107. Support for claims 43 and 44 may be found at Example 10 at paragraph 137. No new matter has been added.

#### **V. Conclusion**

Please consider this a two-month extension of time from September 12, 2007 to November 12, 2007 and charge Deposit Account No. 26-0084 the amount of \$230.00 for this extension. No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted or excess claim fees, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



Janaé E. Lehman Bell, Ph.D.  
Reg. No. 55,370  
McKEE, VOORHEES & SEASE, P.L.C.  
801 Grand Avenue, Suite 3200  
Des Moines, Iowa 50309-2721  
Phone No: (515) 288-3667  
Fax No: (515) 288-1338

**CUSTOMER NO: 27407**

- JLB/bjh -

Attorneys of Record